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ARTIFICIAL RECHARGE SYSTEM

Background

The present invention relates to a system and method of artificially recharging groundwater reservoirs. Artificial recharge of ground water reservoirs has been used to augment water supplies and to improve water quality of some aquifers. For example, severe dewatering of the Mississippi River Valley alluvial aquifer in Arkansas has occurred over the last 50 years, resulting in falling water table levels over large areas and decreased water yields to existing wells. Thus, there is a need to recharge the aquifer more efficiently than what occurs naturally. Because of the large amount of water removed from the alluvial aquifer, a substantial storage reservoir exists, which, if used effectively, could be an effective alternative to above-ground reservoir storage.

Abstract

The present invention is directed to an artificial recharge system and method for recharging an aquifer. The artificial recharge system includes a constructed wetland, a settling pond, and a porous recharge reservoir. The constructed wetland receives water from a surface water source and has aquatic vegetation used to remove sediments and chemicals from the water. The settling pond receives the water from the constructed wetland and provides additional sediment removal. The porous recharge reservoir, which is hydraulically connected to the aquifer, receives the water from the settling pond. The water flows by gravity from the porous recharge reservoir to the aquifer. A back-flush tube installed within a sand layer in the porous recharge reservoir is used to remove sediment and particulates from the sand layer.

Opportunity

Recharging techniques have been used over the past century, with previous attempts to recharge aquifers being costly and ineffective due to several variables. Water utility and preservation continue to threaten global economic and environmental stability. It is imperative to induce water recharging. The method described is an improvement over previous designs. It provides a low cost, low energy system with minimal moving parts while removing the requirement for chemical treatment of the recharge of water. Further, this recharging method is less expensive and invasive than traditional surface methods consisting of diversions and dams.

Keywords

- artificial water recharge system
- recharging an aquifer

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This technology is protected under US patent application 13/562,891. The US Geological Survey is looking for a partner to further the commercialization of this technology through a license or a collaborative agreement. Interested parties should contact:

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